

Hoku Materials, Inc.
1075 Opakapaka Street
Kapolei, Hawaii, 96707-1887

May 1, 2007

Mr. Bill Rogers
Department of Environmental Quality
Air Quality Division
Stationary Source Program
1410 North Hilton
Boise, Idaho 83706-1255

**Re: Request for Pre-Permit Construction Approval Application
Hoku Materials, Inc.**

Dear Mr. Rogers:

Enclosed is a pre-permit construction approval application addressing Hoku Materials, Inc. proposal to build a 2,000 Mton polysilicon production plant in Pocatello, Idaho. Hoku Materials is requesting DEQ process this application in accordance with the 15-day pre-permit construction approval process contained in IDAPA 58.01.01.213. As required in IDAPA 58.01.01.213.01a., the permit to construct application is being submitted concurrently with this pre-permit construction request.

The enclosed pre-permit construction approval application has been prepared in accordance with DEQ's January 2001 guidance document "Pre-permit Construction Approval Guidance Document." On March 28, 2007 Hoku Materials and JBR Environmental Consultants, Inc. held a meeting with DEQ to discuss that a request for pre-permit construction approval would be forthcoming. Also, in accordance with the requirements for a 15-day pre-permit construction approval, Hoku Materials has advertised in the Idaho State Journal on April 27, 2007 an invitation to attend a public information meeting to be held at the Best Western Pocatello Inn in Pocatello, Idaho on May 9, 2007 at 1:00 pm.

This project meets the eligibility requirements for pre-permit construction approval because the proposed facility is a minor source and does not plan to utilize emission offsets or netting, and the emissions from the facility are unlikely to impact Class I air quality related values. This satisfies the requirement that a certified proof of pre-permit construction eligibility must be submitted with the pre-permit construction approval application in accordance with IDAPA 58.01.01.213.01.

This submittal includes the PTC application, a modeling section that demonstrates compliance with all applicable air quality rules, detailed emission calculations for the proposed facility, and a copy of the newspaper announcement for the public information

meeting. Additionally, this submittal contains an electronic copy of the modeling files that support this application and the \$1,000 PTC application fee.

In accordance with IDAPA 58.01.01.213.01.d, I hereby certify that the Hoku Materials, Inc. facility will comply with any restrictions it has imposed on potential to emit such that emissions will be below major source levels, including emission limitations, operating limitations, and monitoring and reporting requirements.

Pursuant to IDAPA 58.01.01.123, I hereby certify that, based on information and belief formed after reasonable inquiry, the statements and information in this application are true, accurate, and complete.

Please feel free to myself at 808.682.7800 or Daniel Heiser of JBR Environmental Consultants at 208.853.0883 if you have any questions or need additional information.

Sincerely,

Karl Taft
Chief Technology Officer
Hoku Materials, Inc.

Enclosures

Cc: Glen Stucki, Veco USA, Inc.



April 19, 2007

Chris Johnson
JBR
Boise, Idaho

RE: Modeling Protocol for the Hoku Materials Polysilicon Facility Proposed to be Located in Pocatello, Idaho

Chris:

DEQ received your dispersion modeling protocol on April 11, 2007. The modeling protocol was submitted on behalf of Hoku Materials. The modeling protocol proposes methods and data for use in the ambient impact analyses of a Permit to Construct application for a new polysilicon facility in Pocatello, Idaho.

The modeling protocol has been reviewed and DEQ has the following comments:

- Comment 2: The application should provide documentation and justification for stack parameters used in the modeling analyses, clearly showing how stack gas temperatures and flow rates were estimated. In most instances, applicants should use typical parameters, not maximum temperatures and flow rates.
- Comment 3: The proposed receptor grid appears reasonable. However, it is the applicant's responsibility to use a sufficiently tight receptor network such that the maximum modeled concentration is reasonably resolved. If DEQ conducts verification modeling analyses with a tighter receptor grid and compliance with standards is no longer demonstrated, the permit will be denied.
- Comment 5: When using only one year of meteorological data, the design concentrations for short term PM₁₀, SO₂, and CO is the maximum 2nd high modeled concentration. The Maximum 1st high may be used to demonstrate compliance with any TAPs having an AAC.

DEQ's modeling staff considers the submitted dispersion modeling protocol, with resolution of the additional items noted above, to be approved. It should be noted, however, that the approval of this modeling protocol is not meant to imply approval of a completed dispersion modeling analysis. Please refer to the *State of Idaho Air Quality Modeling Guideline*, which is available on the Internet at http://www.deq.state.id.us/air/permits_forms/permitting/modeling_guideline.pdf, for further guidance.

To ensure a complete and timely review of the final analysis, our modeling staff requests that electronic copies of all modeling input and output files (including BPIP and AERMAP input and output files) are submitted with an analysis report. If DEQ provided model-ready meteorological data files, then these do not need to be resubmitted to DEQ with the application. If you have any further questions or comments, please contact me at (208) 373-0112.

Sincerely,

Kevin Schilling
Stationary Source Air Modeling Coordinator
Idaho Department of Environmental Quality
208 373-0112

This checklist is designed to aid the applicant in submitting a complete pre-permit construction approval application.

I. Actions Needed Before Submitting Application

- ☒ Refer to the Rule. Read the Pre-Permit Construction requirements contained in IDAPA 58.01.01.213, Rules for the Control of Air Pollution in Idaho.
- ☒ Refer to DEQ's Pre-Permit Construction Approval Guidance Document. DEQ has developed a guidance document to aid applicants in submitting a complete pre-permit construction approval application. The guidance document is located on DEQ's website (go to http://www.deq.idaho.gov/air/permits_forms/permitting/ptc_prepermit_guidance.pdf)
- ☒ Consult with DEQ Representatives. Schedule a meeting with DEQ to discuss application requirements before submitting the pre-permit construction approval application. The meeting can be in person or on the phone. Contact DEQ's Air Quality Permit Coordinator at (208) 373-0502 to schedule the meeting. Refer to IDAPA 58.01.01.213.01b.
- ☒ Schedule Informational Meeting. Schedule an informational meeting before submitting the pre-permit construction approval application for the purposes of satisfying IDAPA 58.01.01.213.02.a. The purpose for the informational meeting is to provide information about the proposed project to the general public. Refer to IDAPA 58.01.01.213.01.c.
- ☒ Submit Ambient Air Quality Modeling Protocol. It is recommended that an ambient air quality modeling protocol be submitted to DEQ at least two (2) weeks before the pre-permit construction approval application is submitted. Contact DEQ's Air Quality Modeling Coordinator at (208) 373-0502 for information about the protocol.
- ☒ Written DEQ Approved Protocol. Written DEQ approval of the modeling protocol must be received before the pre-permit construction approval application is submitted. Refer to IDAPA 58.01.01.213.01.c.

II. Application Content

Application content should be prepared using the checklist below. The checklist is based on the requirements contained in IDAPA 58.01.01.213 and DEQ's Pre-Permit Construction Approval Guidance Document.

- ☒ Pre-Permit Construction Eligibility and Proof of Eligibility. Pre-permit construction approval is available for minor sources and for minor modifications only. Emissions netting and emissions offsets are not allowed to be used. A certified proof of pre-permit construction eligibility must be submitted with the pre-permit construction approval application. Refer to IDAPA 58.01.01.213.01.
- ☒ Request to Construct Before Obtaining a Permit to Construct. A letter requesting the ability to construct before obtaining the required permit to construct must be submitted with the pre-permit construction approval application. Refer to IDAPA 58.01.01.213.01.c.
- ☒ Apply for a Permit to Construct. Submit a Permit to Construct application using forms available on DEQ's website at http://www.deq.idaho.gov/air/permits_forms/forms/forms/ptc_general_application.pdf. Refer to IDAPA 58.01.01.213.01.a.
- ☒ Permit to Construct Application Fee. The permit to construct application fee must be submitted at the time the original pre-permit construction approval application is submitted. Refer to IDAPA 58.01.01.224.

- ☒ Notice of Informational Meeting. Within ten (10) days after the submittal of the pre-permit construction approval application, an information meeting must be held in at least one location in the region where the stationary source will be located. The information meeting must be made known by notice published at least ten (10) days before the information meeting in a newspaper of general circulation in the county in which the stationary source will be located. A copy of this notice, as published, must be submitted with the pre-permit construction approval application. Refer to IDAPA 58.01.01.213.02.a.
- ☒ Process Description(s). The process or processes for which pre-permit construction approval is requested must be described in sufficient detail and clarity such that a member of the general public not familiar with air quality can clearly understand the proposed project. A process flow diagram is required for each process for which pre-permit construction approval is requested. Refer to IDAPA 58.01.01.213.01.c.
- ☒ Equipment List. All equipment that will be used for which pre-permit construction approval is requested must be described in detail. Such description includes, but is not limited to, manufacturer, model number or other descriptor, serial number, maximum process rate, proposed process rate, maximum heat input capacity, stack height, stack diameter, stack gas flowrate, stack gas temperature, etc. All equipment that will be used for which pre-permit construction approval is requested must be clearly labeled on the process flow diagram. Refer to IDAPA 58.01.01.213.01.c.
- ☒ Scaled Plot Plan. It is recommended that a scaled plot plan be included in the pre-permit construction approval application and must clearly label the location of each proposed process and the equipment that will be used in the process.
- ☒ Proposed Emissions Limits and Modeled Ambient Concentration for All Regulated Air Pollutants. All proposed emission limits and modeled ambient concentrations for all regulated air pollutants must demonstrate compliance with all applicable air quality rules and regulations. Regulated air pollutants include criteria air pollutants (PM₁₀, SO_x, NO₂, O₃, CO, lead), toxic air pollutants listed pursuant to IDAPA 58.01.01.585 and 586, and hazardous air pollutants listed pursuant to Section 112 of the 1990 Clean Air Act Amendments (go to <http://www.epa.gov/ttn/atw/188polls.html>). Describe in detail how the proposed emissions limits and modeled ambient concentrations demonstrate compliance with each applicable air quality rule and regulation. It is requested that emissions calculations, assumptions, and documentation be submitted with sufficient detail so DEQ can verify the validity of the emissions estimates. Refer to IDAPA 58.01.01.213.01.c.
- ☒ Restrictions on a Source's Potential to Emit. Any proposed restriction on a source's potential to emit such that permitted emissions will be either below major source levels or below a significant increase must be described in detail in the pre-permit construction approval application. Refer to IDAPA 58.01.01.213.01.d.
- ☒ List all Applicable Requirements. All applicable requirements must be cited by the rule or regulation section/subpart that applies for each emissions unit. Refer to IDAPA 58.01.01.213.01.c.
- ☒ Certification of Pre-Permit Construction Approval Application. The pre-permit construction approval application must be signed by the Responsible Official and must contain a certification signed by the Responsible Official. The certification must state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. Refer to IDAPA 58.01.01.213.01.d and IDAPA 58.01.01.123.
- ☒ Submit the Pre-Construction Approval Application. Submit the pre-permit construction approval application to the following address:

Department of Environmental Quality
Air Quality Division
Stationary Source Program
1410 North Hilton
Boise, ID 83706-1255

Pre-Permit Application for the Authority to Construct

Hoku Materials, Inc.

Prepared for:
Hoku Materials, Inc.
1075 Opakapaka Street
Kapolei, Hawaii, 96707-1887

Prepared by:
JBR Environmental Consultants, Inc.
7669 West Riverside Drive, Suite 101
Boise, ID 83714

May 1, 2007

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EXECUTIVE SUMMARY

Hoku Materials, Inc. proposes to build a new polysilicon production facility, in Pocatello, Idaho. The Pocatello facility will be a polysilicon production plant designed for 2,000 metric tons a year (Mtons/yr) of polysilicon production.

Emission sources at Hoku will include metallurgical grade silicon storage, polysilicon processing, fuel combustion, and equipment and operation fugitives.

Hoku will have a controlled potential to emit (PTE) below 100 tons per year (tpy) for particulate matter (PM), particulate matter with less than ten microns in diameter (PM10), particulate matter less than 2.5 microns in diameter (PM2.5), oxides of nitrogen (NOx), sulfur dioxide (SO2), volatile organic compounds (VOC), and carbon monoxide (CO). The facility will be a minor with respect to both Title V permitting and New Source Review. The plant boiler and hot oil heater will comply with NSPS Subpart Dc for natural gas firing.

1.0 PROCESS DESCRIPTION

1.1 Overview

Polysilicon is produced by a batch process where pure trichlorosilane (TCS) gas and hydrogen are combined in a number of reactors at around 2000 degrees Fahrenheit and the solid silicon released from the reaction is deposited onto a filament or rod inside the reactor. Over time the rod grows in diameter until the desired size is reached and then the online reactor is taken offline to recover the silicon rod which is packaged for sale. The deposition process is called chemical vapor deposition or CVD. Having multiple reactors allows the overall process to be a continuous process as a bank of reactors is always running while another bank is offline for polysilicon removal and reconditioning to accept feed again to begin the process over.

Production of polysilicon can be separated into four main processing functions as follows:

- Feed Preparation and Purification
- Polysilicon Production
- Polysilicon Product Handling
- Byproducts and Waste Treatment

1.2 Feed Preparation and Purification

Trichlorosilane (TCS) is made by reacting metallurgical grade silicon (MGS) with hydrogen chloride (HCl) in a fluid bed reactor with a very small amount of copper chloride catalyst that promotes the reaction. As well as making TCS, other chlorosilanes are produced in the reactor, the major one being silicon tetrachloride (STC). Metal chlorides are also formed from the impurities in the MGS feed. These chlorides are removed from the reactor product stream by cooling the stream and precipitating out these compounds which are sent to waste treatment.

The mixed chlorosilanes products from the fluid bed reactor are separated and purified. Removal of boron and phosphorous compounds is required and achieved by passing the stream through packed absorber beds. The main products produced are purified TCS and STC which are fed to the Polysilicon Production area.

1.3 Polysilicon Production

Purified TCS and hydrogen are fed into the polysilicon deposition reactors and they are heated by using electric current passed through the rods on which the polysilicon is deposited. At the high temperatures achieved TCS and hydrogen react and silicon and hydrogen chloride are the main products. The gas products containing hydrogen chloride, hydrogen and unreacted chlorosilanes are cooled and sent to a vent gas recovery system.

Once the rod of polysilicon has grown to the desired diameter (a process which takes approximately five days) the reactor is taken offline and the TCS feed is switched to a different deposition reactor. There are a total of 16 reactors for polysilicon deposition. Removal of polysilicon, cleaning and reloading takes approximately two days.

Purified STC is reacted with hydrogen in a set of hydrogenation reactors housed in the same area as the polysilicon reactors. The hydrogenation reactors are used to convert the STC into TCS. The products from these reactors are sent to the vent gas recovery system.

As part of the polysilicon production process, product sampling is conducted throughout the various stages of production. Laboratory sample products are treated in the lab scrubber system. Hoku will utilize a natural gas fired boiler and hot oil heater as well as a cooling tower to provide heating and cooling to various process equipment in all areas of the plant.

1.4 Polysilicon Product Handling

The U shaped rods of polysilicon grown in the deposition reactors are carefully removed from the reactors and transported to the product handling area. This area along with the reactor buildings are controlled environments to ensure no contamination occurs to the product. The polysilicon rods are broken into chunks and bagged. The bags are packaged and stored prior to shipping out to the end customers.

1.5 Byproduct and Waste Treatment

Exhaust gases from the polysilicon deposition reactors and the hydrogenation reactors are treated in the Vent Gas Recovery system. In this system Hydrogen, Hydrogen Chloride and non reacted chlorosilanes are recovered and returned to the appropriate processing unit for reuse. This step minimizes the needs for fresh feedstocks to be added to the process.

Products that are not recovered will be treated in the chlorosilane scrubber system to ensure all chlorosilanes are removed from the excess gas streams. All relief valves will also be routed to the relief vent scrubber system prior to atmospheric discharge.

Waste streams from the feed preparation system (containing metal chlorides) are processed in a metal chloride recovery system that recovers chlorosilanes in this stream. The remaining waste plus any streams containing hydrogen chloride are then sent to a neutralization process. Chlorosilane polymers from the polysilicon production process will also be routed to the neutralization area. Typically neutralization will be by lime and high level chloride wastes will then be discharged to an on site evaporation pond after solids removal. The solid waste is then land filled. Other aqueous waste streams with low levels of contaminants are also treated before release into the local municipal treatment facilities.

1.6 Equipment List

Included in Appendix B is a process flow diagram and scaled plot plan which identifies all equipment that is requested for pre-permit construction. Included in Appendix C are the PTC application forms which describe in detail all equipment that is requested for pre-permit construction. The manufacturer, model number and serial number have not been determined at this time. Hoku Materials intends to bid out the various types of equipment. After the manufacturers are selected the manufacturer, model number and serial number will be made available to Department representatives upon request.

2.0 REGULATORY APPLICABILITY

A review of state and local air quality regulations is provided in Table 2-1. Each regulation is described in the following sections. Included in Appendix C is the completed federal regulatory applicability PTC form.

Table 2-1. Regulatory Applicability Summary

Program Description		Regulatory Citation	Applicable
2.1	National Ambient Air Quality Standards (NAAQS)- (dispersion modeling)	40 CFR Part 50	NO
2.2	Title V Operating Permit	40 CFR Part 70	NO
2.3	Air Pollutants (NESHAPs)	40 CFR Parts 61, 63	NO
2.4	New Source Review (NSR)	40 CFR Part 52	NO
2.5	New Source Performance Standards (NSPS)	40 CFR Part 60 Subpart Dc	YES
2.6	Acid Rain Requirements	40 CFR Parts 72–78	NO
2.7	Stratospheric Ozone Protection Requirements	40 CFR Part 82	NO
2.8	Risk Management Programs For Chemical Accidental Release Prevention	40 CFR Part 68	YES
2.9	State Rules		
2.9.1	Fuel Burning Equipment	IDAPA 58.01.01.676	YES
2.9.2	Particulate Matter	IDAPA 58.01.01.703	YES
2.9.3	Fugitive Dust Control	IDAPA 58.01.01.808	YES
2.9.4	Facility Emissions Cap	IDAPA 58.01.01.176	YES
2.9.5	Toxic Air Pollutants	IDAPA 58.01.01.585 and 586	YES

2.1 National Ambient Air Quality Standards (NAAQS)

Primary National Ambient Air Quality Standards (NAAQS) are identified in 40 CFR Part 50 and define levels of air quality, which the United States Environmental Protection Agency (USEPA) deems necessary to protect the public health. Secondary NAAQS define levels of air quality, which the USEPA judges necessary to protect public welfare from any known, or anticipated, adverse effects of a pollutant. Examples of public welfare include protecting wildlife, buildings, national monuments, vegetation, visibility, and property values from degradation due to excessive emissions of criteria pollutants.

Specific standards for the following pollutants have been promulgated by USEPA: PM_{2.5}, PM₁₀, SO₂, NO_x, CO, ozone, and lead. The Hoku polysilicon plant will emit PM, PM₁₀, PM_{2.5}, SO₂, NO_x, CO, and VOCs, a precursor to ozone. The facility is a minor source with respect to PSD and Title V as it will not exceed any major source thresholds.

2.2 Title V (Part 70) Operating Permit

Title V of the Clean Air Act (CAA) created the federal operating permit program. These permitting requirements are codified in 40 CFR Part 70. The operating permits required under these rules are often referred to as “Part 70 operating permits.” These permits are required for major sources with a PTE (considering federally enforceable limitations) greater than 100 tpy for any criteria pollutant, 25 tpy for all hazardous air pollutants (HAPs) in aggregate, or 10 tpy of any single HAP. Hoku will qualify as a synthetic minor source and will be exempt from a Title V operating permit.

2.3 National Emission Standards for Hazardous Air Pollutants (NESHAPs)

Two sets of National Emissions Standards for Hazardous Air Pollutants (NESHAPs) may potentially apply to the Hoku polysilicon facility. The first NESHAP regulations were developed under the auspices of the original CAA. These standards are codified in 40 CFR Part 61, and address a limited number of pollutants and industries. 40 CFR Part 61 regulations do not apply to this planned facility.

Newer regulations are codified in 40 CFR Part 63 under the authority of the 1990 Clean Air Act Amendments (CAAA). These standards regulate HAP emissions from specific source categories and typically affect only major sources of HAPs. Part 63 regulations are frequently called Maximum Achievable Control Technology (MACT) standards. Major HAP sources have the PTE 10 tpy or more of any single HAP or 25 tpy or more of all combined HAP emissions. At the Hoku polysilicon facility, potential emissions of individual HAPs will be less than 10 tpy and combined HAP emissions will be less than 25 tpy. Therefore, the facility is not subject to 40 CFR Part 63.

2.4 New Source Review (NSR) Requirements

Bannock County is designated as an attainment area for all criteria pollutants. Therefore, the prevention of significant deterioration (PSD) regulations codified in 40 CFR Part 52 could potentially apply to the proposed facility. The PSD rule applies to: (1) a new major source that has the potential to emit 100 tons per year or more for any criteria pollutant for a facility that is one of the 28 industrial source categories listed in 40 CFR § 52.21(b)(1)(i)(a); or (2) a new major source that has the potential to emit 250 tons per year or more if the facility is not on the list of industrial source categories; or (3) a modification to an existing major source that results in a net emission increase greater than a PSD significant emission rate as specified in 40 CFR § 52.21(b)(23)(i); or (4) a modification to an existing minor source that is major in itself. The facility's PTE does not exceed the major source threshold for any criteria pollutants. Therefore, Hoku is not subject to PSD regulations.

2.5 New Source Performance Standards (NSPS)

New Source Performance Standards (NSPS) in 40 CFR Part 60 are applicable to new, modified, or reconstructed stationary sources that meet or exceed specified applicability thresholds. The facility boiler and hot oil heater are also subject to NSPS Subpart Dc and will comply by burning natural gas only.

2.5.1 Standards of Performance Steam Generating Units

Subpart Dc of the NSPS, "Standards of Performance for Small Industrial, Commercial, and Institutional Steam Generating Units" applies to the boiler and hot oil heater at the facility because the total heat input is between 10 and 100 million British thermal units per hour (MMBtu/hr). The boiler and hot oil heater are not subject to any emission limitations in Subpart Dc because they will burn natural gas only. The boiler and hot oil heater will, however, be subject to the monitoring and recordkeeping requirements identified in NSPS Subpart Dc.

2.6 Acid Rain Requirements

The acid rain requirements codified in 40 CFR Parts 72-78 apply only to utilities and other facilities that combust fossil fuel (mainly coal) and generate electricity for wholesale or retail sale. The proposed facility will not produce electrical power for sale. Therefore, the facility is not subject to the acid rain provisions and will not require an acid rain permit.

2.7 Stratospheric Ozone Protection Requirements

Protection of the stratospheric ozone layer was promulgated as part of the CAAA. Sections 601-618 limit activities that deplete stratospheric ozone. The stratospheric ozone protection requirements may apply to this facility. Use of some fire equipment could potentially release an ozone depleting substance known as halons. Release of halons during equipment maintenance is unlawful. If the fire protection equipment is subject to stratospheric ozone

protection program requirements in 40 CFR Part 82, a third-party contractor will be hired by Hoku to maintain the fire protection equipment in accordance with the stratospheric ozone protection requirements.

2.8 Risk Management Programs for Chemical Accidental Release Prevention

The facility is subject to the Chemical Accidental Release Prevention Program and will develop and implement a Risk Management Plan (RMP). Facilities that produce, process, store, or use any regulated toxic or flammable substance in excess of the thresholds listed in 40 CFR Part 68 must develop a RMP. The facility will use anhydrous hydrogen chloride, trichlorosilane and silicon tetrachloride. Storage will exceed the applicability thresholds. A RMP will be prepared and submitted, as required by 40 CFR 68.

2.9 State Rules

The Idaho Administrative Procedure Act (IDAPA) promulgates several emissions regulations that apply to Hoku in addition to those listed above.

2.9.1 Fuel Burning Equipment – Particulate Matter

IDAPA 58.01.01.676 restricts any fuel burning source of 10 MMBtu or greater to limit the PM released from combustion to 0.015 gr/dscf for gas fuel and 0.05 gr/dscf for liquid fuels. The boiler and hot oil heater will each comply by burning natural gas only.

2.9.2 Particulate Matter

IDAPA 58.01.01.703 promulgates restrictions on PM for the entire facility based on process weight. Hoku will comply with this rule by using baghouse filters and dust control practices to limit the facility's emission.

2.9.3 Fugitive Dust Control

IDAPA 58.01.01.808 promulgates the implementation of a fugitive dust control system for any plant that releases fugitive particulate matter. Hoku will comply by paving all facility roads and implementing a dust suppression plan.

2.9.4 Facility Emissions Cap

IDAPA 58.01.01.176 establishes procedures to obtain a Facility Emissions Cap (FEC) for stationary sources or facilities. Hoku is requesting an FEC with the submittal of this PTC application.

2.9.5 Toxic Air Pollutants

IDAPA 58.01.01.585 and 586 establishes requirements for compliance with toxic air pollutants. Hoku demonstrates compliance with the standards.

3.0 EMISSION SUMMARY

A summary of the potential emissions for the facility is presented in Table 3-1. Emission calculations have been completed for: PM, PM₁₀, SO₂, NO_x, VOCs, CO, and both individual and combined hazardous air pollutants. Detailed emission calculations are included in Appendix A. Permit application forms are included as Appendix C.

Table 3-1. Hoku Materials Polysilicon Production PTE

PM (tpy)	PM₁₀ (tpy)	SO₂ (tpy)	NO_x (tpy)	VOC (tpy)	CO (tpy)	Individual HAP (tpy)	Combined HAP (tpy)
15.24	15.24	4.34	60.35	3.73	33.47	3.22	3.87

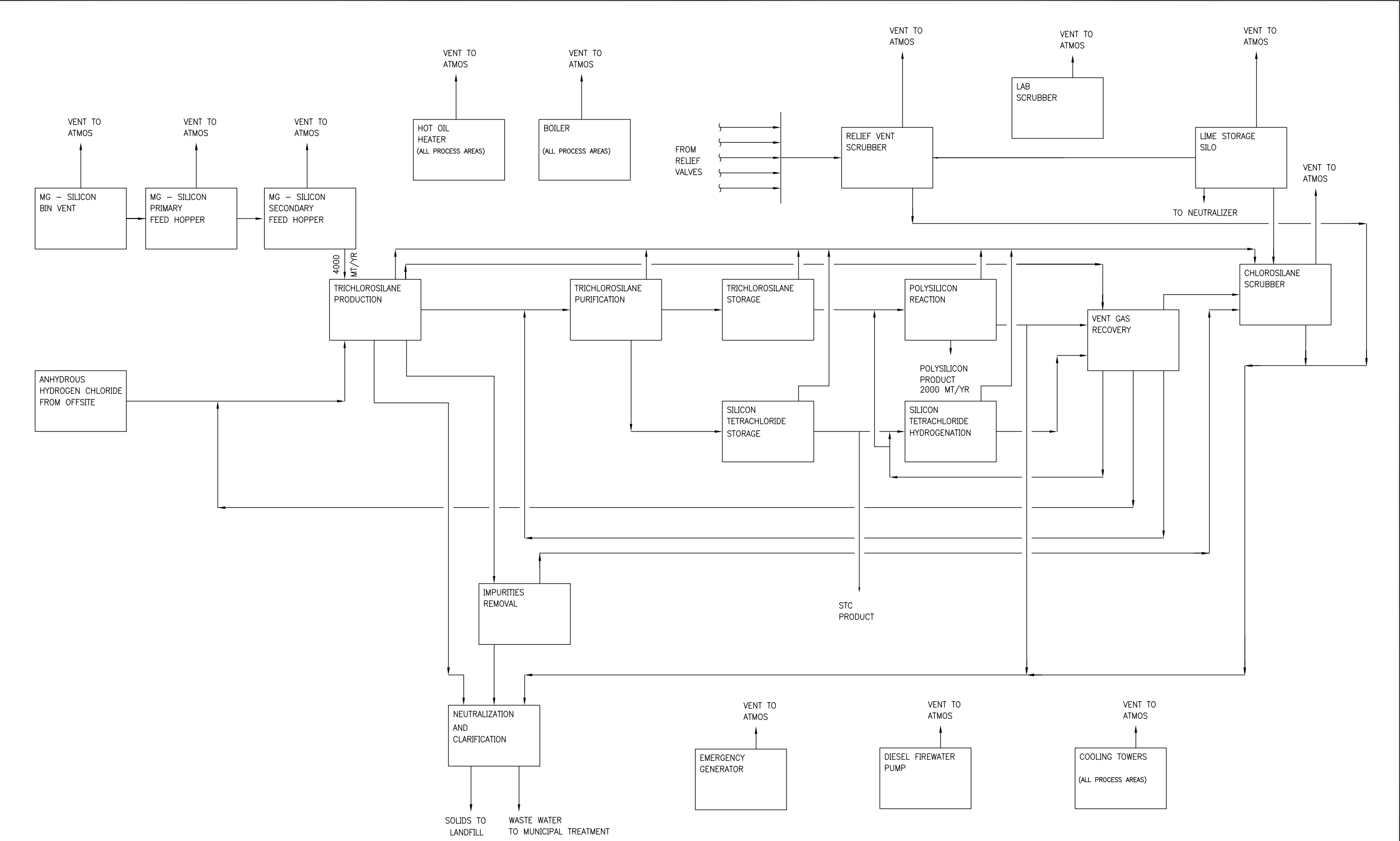
APPENDIX A

EMISSION CALCULATIONS

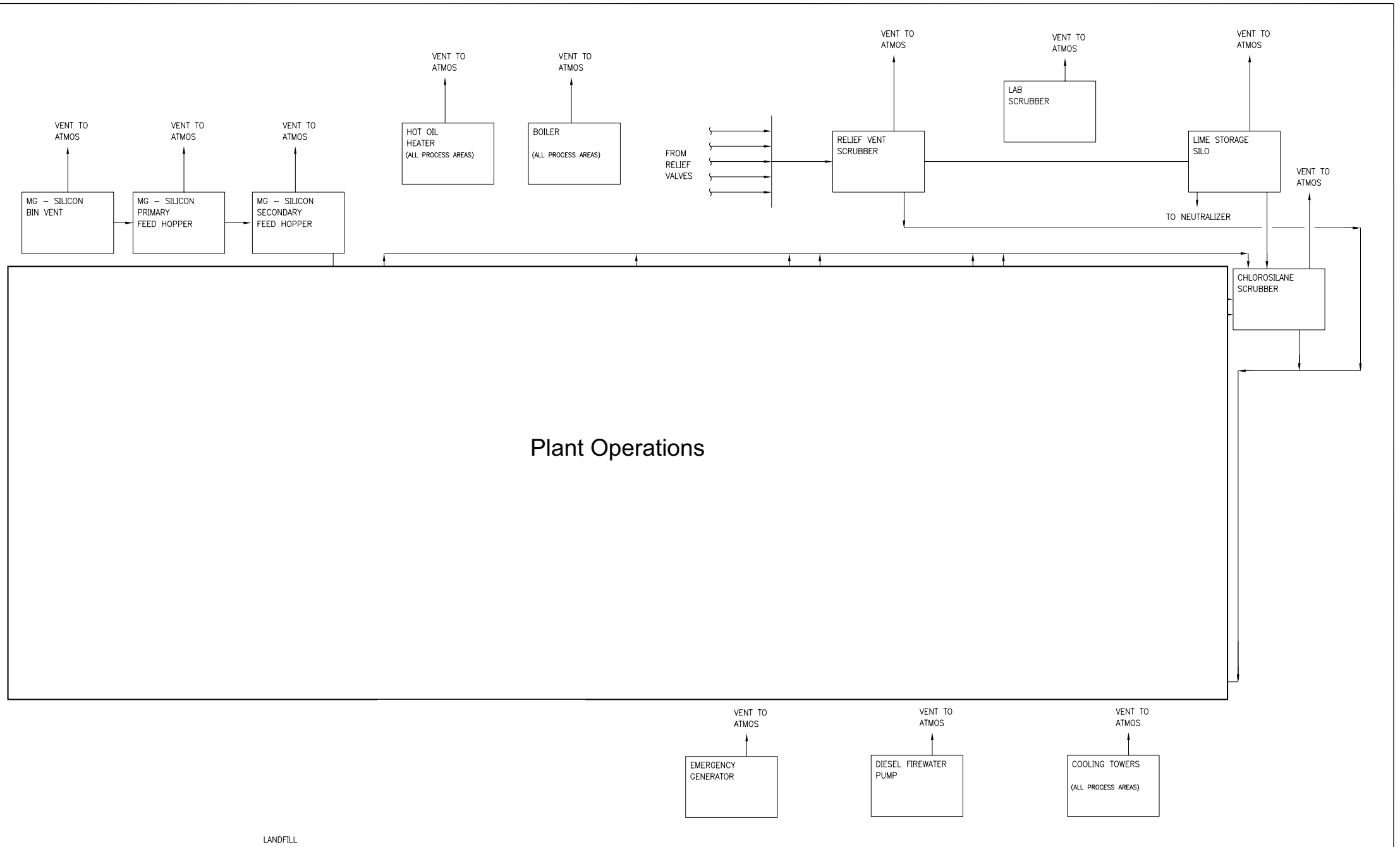
APPENDIX B

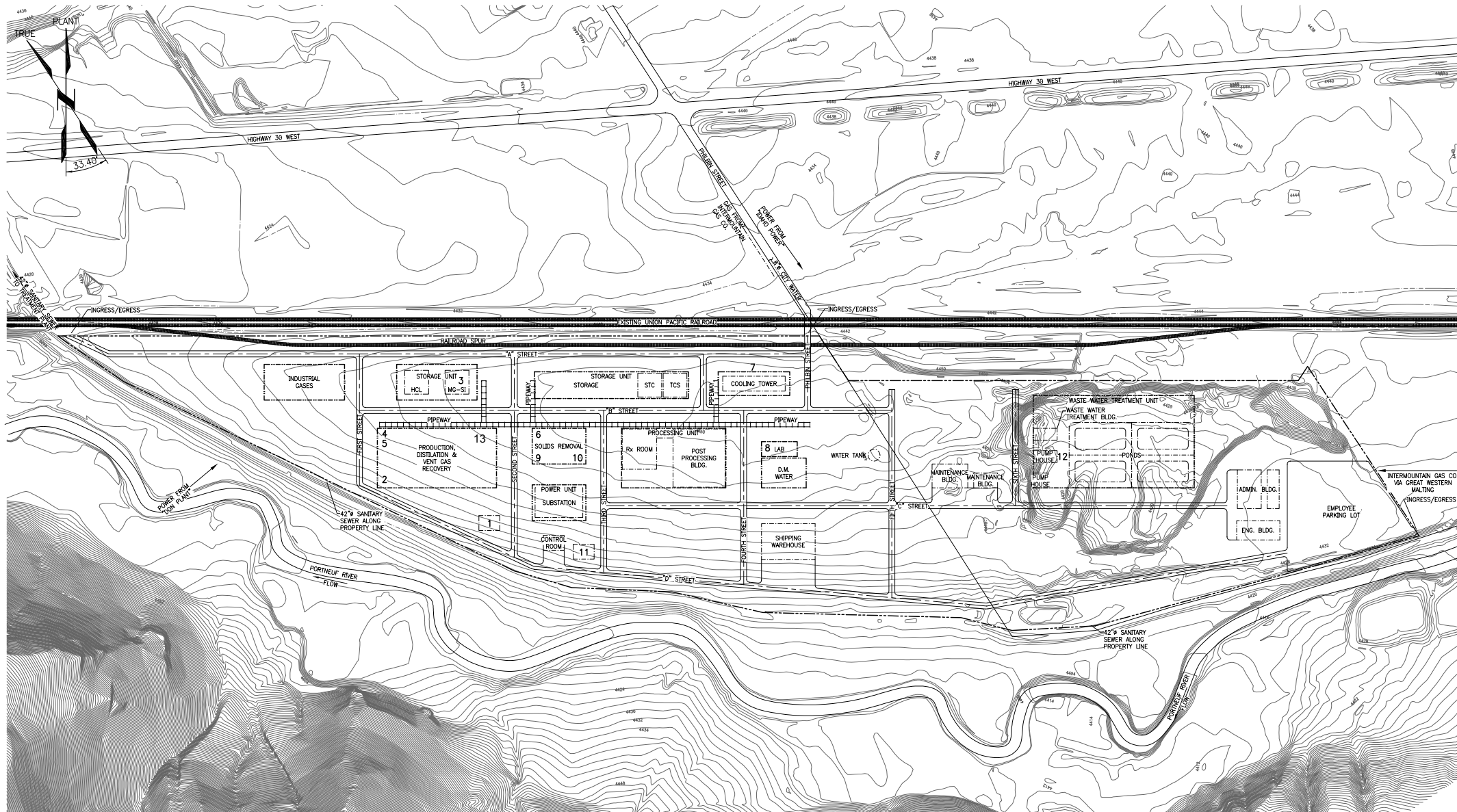
PROCESS FLOW DIAGRAM

SCALED PLOT PLAN

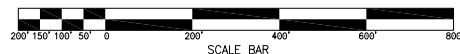


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[illegible]



- 1- Boiler
- 2- Hot Oil Heater
- 3- M.G. Silicon Bin Vent
- 4- M.G. Silicon Primary Hopper
- 5- M.G. Silicon Secondary Hopper
- 6- Lime Storage Silo
- 7- Cooling Tower
- 8- Lab Scrubber
- 9- Chlorosilane Scrubber
- 10- Relief Vent Scrubber
- 11- Emergency Generator
- 12- Fire Water Pump
- 13- Fugitive HCl and VOC



HOKUScientific®



PROJECT NAME HOKU SCIENTIFIC POLYSILICON ~ POCATELLO IDAHO PLANT		SCALE AS NOTED
DRAWN M. Willard	PROPOSED SWANSON ACREAGE PRELIMINARY EMISSIONS POINT PLOT PLAN	
DESIGNED G. Stucki		
CHECKED G. Stucki		
APPROVED V. Kallio		
DRAWING NUMBER SK-0101-C-15	SHEET 1 OF 1	DATE 03/26/07 PROJECT NO. 397025-0101 REV A

APPENDIX C
PTC APPLICATION FORMS

APPENDIX D
MODELING REPORT

AIR QUALITY MODELING REPORT

PURPOSE

This air quality modeling report documents the air quality analyses prepared to support the Permit to Construct (PTC) application for the planned Hoku Scientific polysilicon plant off Highway 30 in northwest Pocatello.

INTRODUCTION

This modeling analysis was prepared to support the facility's permit application, which includes a Facility Emission Cap (FEC) consistent with IDAPA 58.01.01 air quality regulations. The facility will be a minor source. The modeling was prepared consistent with recommendation made by IDEQ air quality modeling representative Kevin Schilling, the methodology in the IDEQ-approved modeling protocol, and follow-up discussions. Figure 1 below shows the facility location.

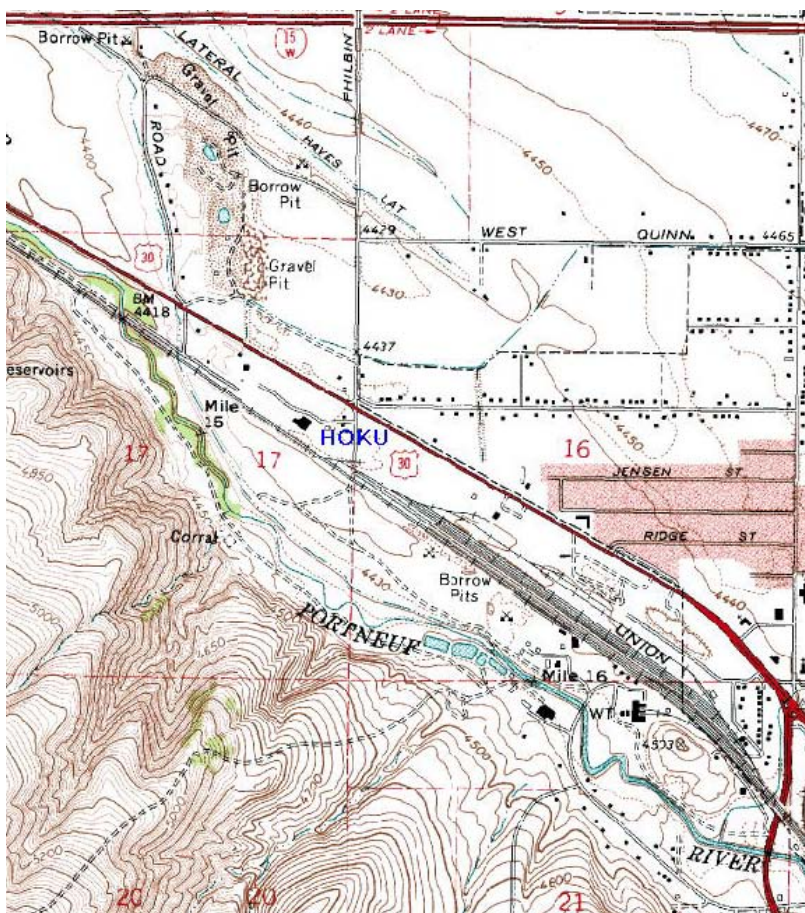


Figure 1 Hoku Scientific Facility Location

MODEL DESCRIPTION / JUSTIFICATION

The model chosen is AERMOD, the US EPA approved model recommended by IDEQ. AERMOD has recently replaced the Industrial Source Complex model ISCST3 as the primary recommended model for facilities with multiple emission sources. AERMOD was applied as recommended in EPA's *Guideline on Air Quality Models*, consistent with guidance in IDEQ's *Air Quality Modeling Guideline*. Recommended regulatory default options were employed. Terrain data was processed consistent with the IDEQ guidance, discussions with IDEQ's Mr. Schilling, and EPA guidance for AERMAP, as documented in the IDEQ-approved modeling protocol. Meteorological data recommended for this application was supplied by IDEQ. The Prime building downwash algorithm was employed. Modeling analyses were performed for all pollutants emitted above IDEQ emission thresholds. That included PM-10, and NO₂, CO and SO₂, and seven toxic air pollutants (TAPs). Chemical transformation of emissions was not considered. All these details were included in the modeling protocol which IDEQ accepted; the few conditions of IDEQ's acceptance are incorporated in this analysis.

EMISSION AND SOURCE DATA

Model stack and emissions data representative of the worst case emissions at the planned Hoku Scientific facility were incorporated directly into the air quality modeling analysis. Emission rates modeled for each pollutant are the maximum emissions under proposed operations over the duration of the standard for that pollutant. That results in different emission rates for the same pollutant for annual and shorter term averaging period analyses.

The emission inventory was developed consistent with worst-case conditions anticipated during operation at the facility consistent with current facility plans. The facility emissions were conservatively estimated to exceed IDEQ modeling thresholds for criteria pollutants PM-10, NO_x, SO₂, and CO, IDAPA 58.01.01.585 TAP HCL, and six IDAPA 58.01.01.586 TAPs.

Table 1 summarizes the pollutant emission data.

AIR QUALITY MODELING REPORT HOKU SCIENTIFIC, POCATELLO

Table 1 Model Source Data

POINT SOURCES		Easting (X)	Northing (Y)	Base Elev	Stack Height	Temp	Exit Vel	Stack Diam	PMTE N	PMTEN AN	NOX	SO2	SO2A N	CO	HCl	NGT APS	Benz ene	Form aldehyde	Benz o(a)p yrene	Total PAH
Source ID	Source Description	(m)	(m)	(m)	(ft)	(°F)	(fps)	(ft)	(lb/hr)	(tpy)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
BH1	GWM Cocontrib	378487	4750062	1353	24.01	59.99	0.003	0.003	0.0663	0.2904										
BH2	GWM Cocontrib	378516.2	4750070	1353	113.0	59.99	0.003	0.003	0.1357	0.5944										
BH3	GWM Cocontrib	378485.4	4750090.5	1353	113.0	59.99	0.003	0.003	0.0841	0.3685										
KSE01	GWM Cocontrib	378483	4750053	1353	104.0	65.03	6.20	20.63	0.1698	0.7439										
KSE02	GWM Cocontrib	378493.4	4750046	1353	104.0	65.03	6.20	20.64	0.1698	0.74391										
KSE03	GWM Cocontrib	378504.2	4750039	1353	104.0	65.03	6.20	20.64	0.1698	0.74391										
KSE04	GWM Cocontrib	378516.1	4750031	1353	104.0	65.03	6.2	20.6	0.1698	0.7439										
KSE05	GWM Cocontrib	378526.4	4750023.5	1353	104.0	65.03	6.2	20.6	0.1698	0.7439										
CS	GWM Cocontrib	378478.8	4750064	1353	96.5	99.95	0.0	2.3	0.3302	1.4461										
BS1	GWM Cocontrib	378535	4750011	1353	112.0	350.0	17.5	2.9	0.3802	1.6651										
BS2	GWM Cocontrib	378472.5	4750067	1353	34.0	400.0	0.0	0.0	0.0190	0.0832										
BOILER	Plant Boiler	377552.0	4750356.0	1350.2	20.0	400.0	47.6	2.5	0.29	1.2702	16.686	0.0229	0.100302	3.2		1.0	8.00E-05	2.86E-03	4.57E-08	4.34E-07
HOH	Hot Oil Heater	377496.0	4750460.0	1350.5	20.0	400.0	47.6	2.5	0.29	1.2702	16.686	0.0229	0.10030	3.2		1.0	8.00E-05	2.86E-03	4.57E-08	4.34E-07
EMG	Emergency Generator	377610.0	4750288.0	1352.0	20.0	800.0	114.6	1.7	2.345	0.5862	20.1	13.551	3.3877	18.425			6.62E-03	6.73E-04	2.19E-06	3.84E-05
FP	Fire Pump	378082.0	4750104.0	1353.0	20.0	800.0	63.7	1.0	1.1	0.275	3.875	1.025	0.25625	3.34			9.88E-04	1.00E-04	3.27E-07	5.72E-06
COOL1	Cooling Tower 1	377846.0	4750360.0	1352.8	30.0	84.0	21.4	35.0	0.243	1.0722										
COOL2	Cooling Tower 2	377867.0	4750343.5	1352.9	30	84.002	21.4	35.0	0.243	1.0722										
COOL3	Cooling Tower 3	377888.0	4750327.0	1353.2	30	84.002	21.4	35.0	0.243	1.0722										
SBV	M.G. Silicon Bin Vent	377622.0	4750510.0	1351.8	20.0	68.0	42.5	0.50	0.09	0.3942										
SPFH	M.G. Silicon Primary Feed Hopper	377527.0	4750507.8	1352.6	65.0	68.0	114.6	0.17	0.03	0.1314										
SSFH	M.G. Silicon	377522	4750498	1352.5	60.0	68.0	76.4	0.17	0.02	0.0876										

AIR QUALITY MODELING REPORT HOKU SCIENTIFIC, POCATELLO

	Secondary Feed Hopper																			
LIME	Lime Storage System	377657	4750415	1353.6	20.0	68.0	22.9	0.83	0.13	0.5694										
LAB	Lab Scrubber	377842	4750273	1354.0	20.0	68	42.5	1.00	0.11	0.4818	2.9784	0.11	0.4818		0.005					
CSS	Chlorosilane Scrubber System	377646	4750397	1353.2	20.0	68	31.2	1.17	1.14	4.9932					0.23					
RVS	Relief Vent Scrubber	377677	4750374	1353.5	20.0	68	31.2	1.17	0.46	2.0148					0.11					

AREA SOURCES		Easting (X)	Northing (Y)	Base Elevation	Release Height	Easterly Length	Northerly Length	Angle from North	Vertical Dimension	HCL
Source ID	Source Description	(m)	(m)	(m)	(ft)	(ft)	(ft)		(ft)	(lb/hr)
HCLVALVE	fugitive HCl from valves	377565	4750450	1353.7	5.0	200	100	30	8.0	0.39

VOLUME SOURCES		Easting (X)	Northing (Y)	Base Elevation	Release Height	Horizontal Dimension	Vertical Dimension	PMTEN	PMTENAN
Source ID	Source Description	(m)	(m)	(m)	(ft)	(ft)	(ft)	(lb/hr)	(lb/hr)
TB	GWM Cocontrib	378484	4750070	1353	56.49606299	38.68110236	52.55905512	0.417	0.417
RB	GWM Cocontrib	378510	4750098	1353	56.49606299	38.68110236	52.55905512	0.266671144	0.266671144

AIR QUALITY MODELING REPORT HOKU SCIENTIFIC, POCATELLO

Modeling analyses were performed for all pollutants listed in Table 1 to estimate maximum impacts during each averaging period for which an applicable ambient air quality impact limit exists. All model sources had emissions understood to represent worst-case permitted emissions for each averaging period to estimate the worst case impacts under allowable emissions from the facility. The stack parameters represent planned actual emissions scenarios. The three TAPs emitted only from natural gas combustion at the boiler and heater (arsenic, cadmium, and nickel) were modeled NGTAPS, with a normalized emission rate of 1 lb/hr. Actual impacts for those three IDAPA 58.01.01.586 TAPS were calculated by multiplying the predicted maximum annual average impact by the actual emission rates in lbs/hr. All model source data underwent quality assurance review by JBR Environmental, the engineers designing the facility, and the facility owners and representatives.

The facility submits this application in accordance with facility-wide emissions cap (FEC) sections of IDAPA 58.01.01.175 – 182. Consistent with FEC requirements, this analysis may be updated as necessary during the term of the FEC permit to ensure that the analysis estimates worst-case impacts during actual and potential operations within the permit.

Building downwash was accounted for by including in the AERMOD model analysis Prime building downwash from all buildings within the facility. All Hoku buildings within 5 building heights of any emission source are included in the modeling.

One external potential co-contributing source recommended by IDEQ, Great Western Malting, was included in the modeling analysis using data provided by IDEQ. The buildings at Western malt were also included in the BPIP building downwash calculations for this analysis. The impact of the Hoku facility in combination with the IDEQ-recommended co-contributing source is provided with the analysis results reported later in this document.

Figure 2 shows the model layout, with the facility property / ambient air boundary. Facility buildings are shown in black within the facility boundary, and facility emission sources are shown and labeled in red. The blocks and overwritten red labels to the bottom right of the Hoku property boundary represent the buildings and emission points for the Great Western Malt sources included in the modeling analysis. The background grid is the UTM coordinate system, NAD 27, whose units are in meters. The dots beyond the property boundary indicate the inner-most model receptors.

AIR QUALITY MODELING REPORT HOKU SCIENTIFIC, POCATELLO

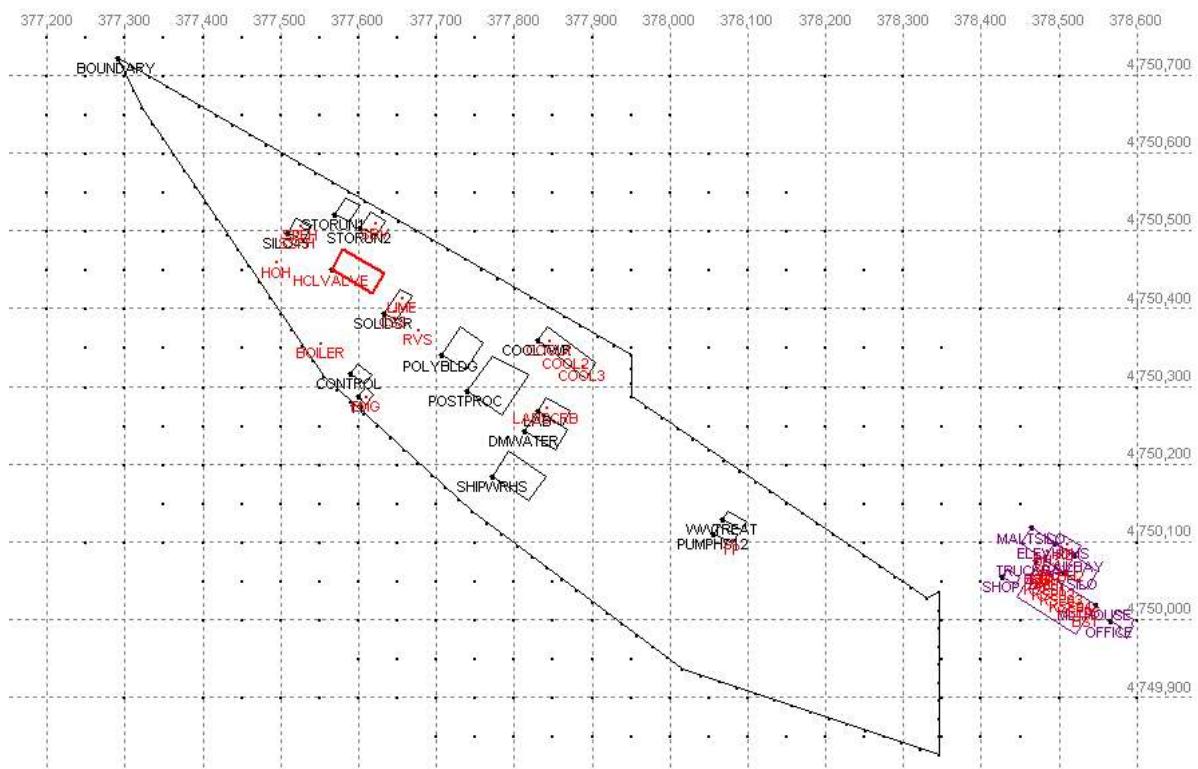


Figure 2 Model Facility Layout

RECEPTOR NETWORK / MODEL DOMAIN

The property boundary / public access limit was used as the ambient air boundary for this analysis. Model receptors were placed from the public access limit out at least 5 kilometers in every direction. The dense inner model receptors can be seen as black dots outside the ambient air boundary in Figure 2. The AERMOD modeling domain was conservatively calculated to include nearly the entire USGS quad for any receptor or any elevated point beyond the edge of the receptor network that meets the AERMAP / AERMOD guidance condition of 10% elevation gain. This method is built into the BeeLine BEEST software used to prepare these analyses, and is recommended as conservative in meeting or exceeding new EPA guidance by software developer Dick Perry of Bee-Line software.

Receptor density is 25 meters along the ambient air boundary, 50 meters for at least the first 100 meters, then 100 meters out to 400 meters away from the property boundary, 250 meters out to 1,000 meters from the ambient air boundary, 500 meters for the next 4 kilometers to 5 kilometers. A few receptors onsite at Great Western Malt were eliminated because that facility had slightly elevated impacts there, where they were not enforceable. Model results for the subgroup Hoku shows that predicted impacts in that vicinity from the proposed action were insignificant.

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Figure 3 shows the facility and its ambient air boundary (the white spot in the middle of dense inner receptor network that show up as black in the center), the receptor network (the black dots around the denser inner model receptors), the model domain (green line just inside USGS quad lines around the receptor network), the latitude and longitude grids in the vicinity, and the USGS quad maps that cover the model domain.

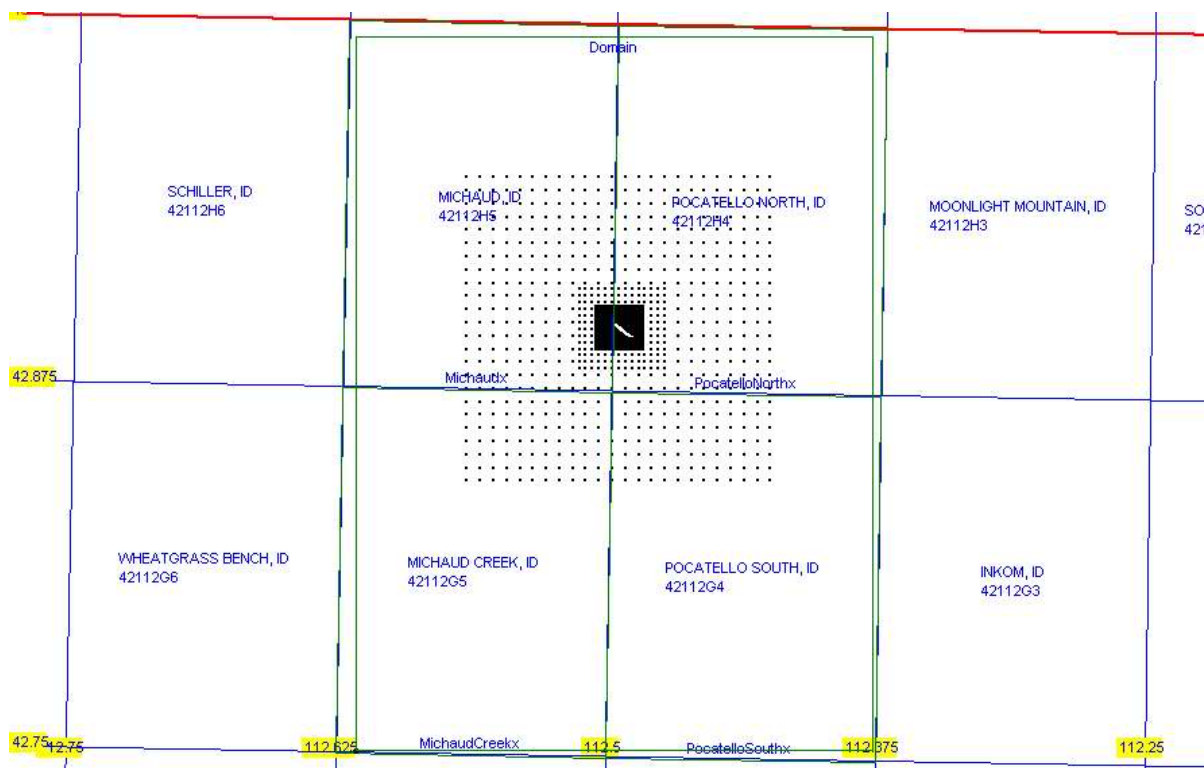


Figure 3 Model Domain and Receptor Network

All model predicted maximum facility impacts occurred at or within 10 meters of the ambient air boundary, within the 25 meter grid density. The maximum impacts are shown to drop off considerably moving toward the outer edge of the receptor network.

The receptor networks employed were consistent with those in the IDEQ approved modeling protocol, and ensured that the analysis meets or exceeds IDEQ receptor network requirements and capture the maximum impact from the facility. Therefore, no supplemental receptor network or expansion of the model domain was required or included.

AERMAP INPUT AND ELEVATION DATA

All building and source base and receptor elevations were calculated from USGS 7.5-degree (30m or less horizontal resolution) DEM data (UTM NAD 27) downloaded from Geo Community (www.geocommunity.com), the USGS freeware download system, using the Bee-Line BEEST preprocessing system. That same DEM data was used in the AERMAP preprocessor to prepare the terrain data for the model domain to run AERMOD. The anchor location and user location required by AERMAP was near the center of the Hoku facility. Electronic data files sufficient to review or duplicate the AERMAP model application are included with this report.

METEOROLOGICAL DATA AND LOCAL PARAMETERS

Model meteorological data recommended for use in this analysis was provided by IDEQ. The data provided was collected in 1997 at the Simplot Don Siding site #1 location, approximately 2 miles NW of the Hoku location. The Hoku site is deep enough in the Portneuf Valley to be blocked from the prevailing Snake River Plain WSW winds. The Simplot Don Siding plant is at the mouth of the Portneuf Valley and more exposed to the Snake River Plain winds, though not as exposed to those flows as the Pocatello airport. Though IDEQ approved consideration of wind flow direction alternation to make the Don Siding data more representative, the two convergent flows from the Portneuf Valley and the Snake River Plain made any flow direction alterations challenging to justify. The modeling analyses were performed without any alterations to the Don Siding meteorological data. Default meteorological settings were employed, except that missing hours in the IDEQ-supplied data had to be allowed. Those analyses are understood to be quite conservative, since the modeling meteorological file shows strong winds to the ENE toward the population in the area that are not representative of the actual Hoku location. Hoku reserves the right to consider more representative meteorological data, or an alternative representation of this data, for future modeling analyses. Modeling analyses were prepared for the complete extent of the one year meteorological data file IDEQ provided.

Figure 4 shows the wind rose for the Don Siding meteorological data file used in the modeling. As noted, the strong W and WSW components are questionably representative of the Hoku location within the Portneuf Valley. The use of this meteorological file provides a conservative estimate of impacts to the populated east and northeast of the facility.

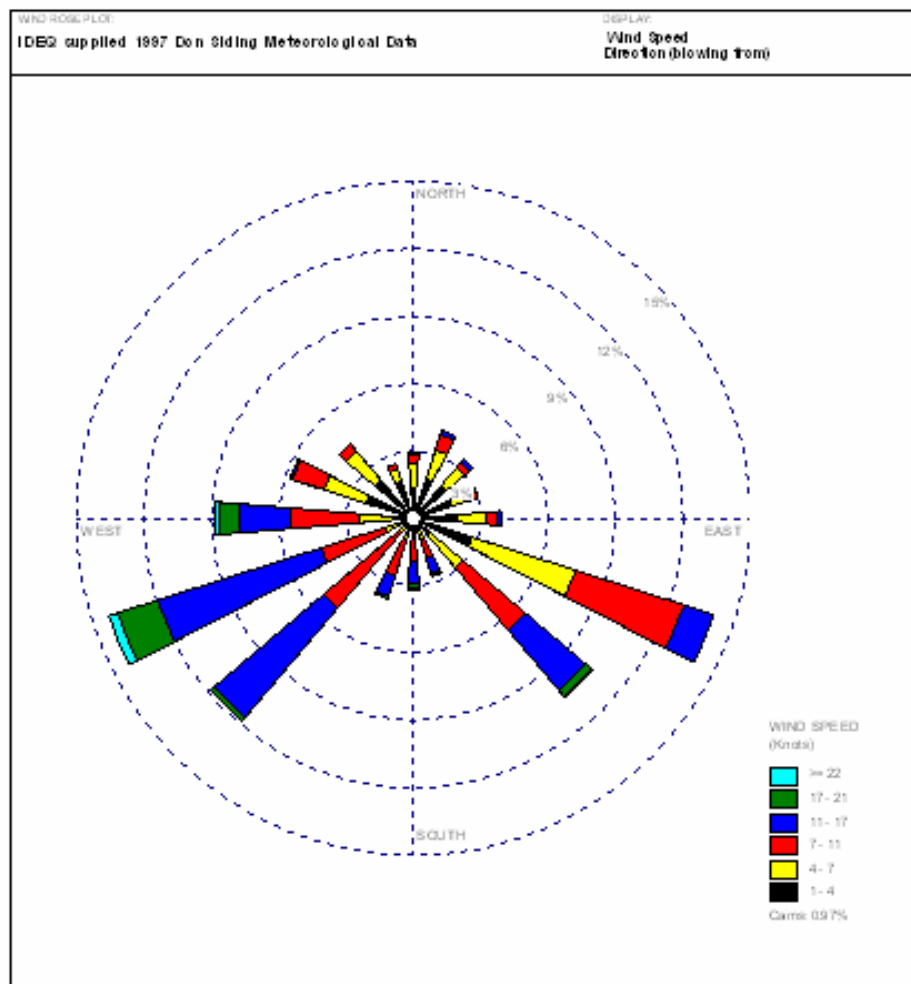


Figure 4 Don Siding 1997 Wind Rose

LAND USE CLASSIFICATION

Though the facility is within the Pocatello city limits and there is some industrial land use in the vicinity, by the traditional Auer algorithm or most other reasoning, the land in the vicinity of the facility, across the model domain is generally open and features limited development that will affect wind flow at emission release heights. Therefore, the urban dispersion algorithm was not employed in this analysis; the rural dispersion algorithms were used.

BACKGROUND CONCENTRATIONS

The background concentrations to be used were recommended by Mr. Schilling of IDEQ. The Simplot facility approximately 2-3 miles NW of the Hoku facility is a potentially significant source of criteria pollutants. Mr. Schilling recommended using a high PM-10 background of 94.6 ug/m^3 , but not including Simplot as a potential co-contributing source. That approach is employed in this analysis. Background concentrations for other criteria

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pollutants and averaging periods modeled were recommended by Mr. Schilling from the Pocatello area SIP analysis. Those values are shown below in Table 2.

EVALUATION OF COMPLIANCE WITH IMPACT STANDARDS

The impact limit standard applicable to this permit application are the National Ambient Air Quality Standards (NAAQS) for criteria pollutants, and the IDAPA 58.01.01.585 and 586 limits for toxic air pollutants (TAPs) listed in Table 2. Predicted total concentrations reported is the model predicted maximum ambient impacts during facility operation plus background concentrations for criteria pollutants. Model predicted maximum impacts reported are the highest predicted impact for the annual average period and for all TAP analyses, and highest second maximum for all shorter averaging periods for criteria pollutants, consistent with the modeling protocol and IDEQ's comments. Table 2 shows the maximum model predicted impact each year for each pollutant for each averaging period modeled.

Table 2
Background Concentrations, Ambient Impact Limits
and Method of Comparison with Ambient Air Quality Standards

Pollutant	Averaging Period	Background Concentration ($\mu\text{g}/\text{m}^3$)	Modeled Maximum Impact ($\mu\text{g}/\text{m}^3$)	Total Concentration ($\mu\text{g}/\text{m}^3$)	IDEQ AAC or AACC ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$)
PM ₁₀	24-hour	94.6	33.7		-	150
	Annual	25	7.5		-	50
NO ₂	Annual	32	8.5		-	100
SO ₂	3-hour	34	441.8		-	1300
	24-hour	26	106.5		-	365
	Annual	8	0.6		-	80
CO	1-hour	5000	667.1		-	40000
	8-hour	2000	295.0		-	10000
HCl	24-hour	-	71.9	-	375	-
Arsenic	Annual	-	6.8E-06	-	2.3E-04	-
Benzene	Annual	-	0.00023	-	0.12	-
Benzo-a-pyrene	Annual	-	<0.00001	-	3.0E-04	-
Cadmium	Annual	-	3.7E-5	-	5.6E-04	-
Formaldehyde	Annual	-	0.00564	-	0.077	-
Nickel	Annual	-	1.6E-04	-	4.2E-03	-
PAHs	Annual	-	<0.00001	-	0.014	-

Maximum model predicted impacts for each pollutant and averaging period occurred at or within 10 meters of the ambient air boundary. The maximum impacts are shown to be well below all applicable impact limits for all TAPs. None of the predicted maximum impacts reached half the applicable standard. The PM-10 impacts and maximum ambient concentrations are shown to be well below applicable impact limits for the annual average period. The 24-hour period was conservatively assumed to have background concentrations > 60% of the NAAQS. Maximum predicted facility impacts are shown to be low enough to prevent any exceedances of that NAAQS under worst case operating conditions, though.

AIR QUALITY MODELING REPORT HOKU SCIENTIFIC, POCA TELLO

Figure 5 shows the maximum model predicted 24-hour average facility impacts. Color coding shows the maximum facility impacts occurring on the western property boundary not far south of the northwest corner, and impacts slightly lower along the north property boundary on the western half of the facility. The impacts of the nearby Western Malt facility are also included in this analysis, creating the increased impacts off the western property boundary. All receptors with predicted second maximum 24-hour average impacts over 10 $\mu\text{g}/\text{m}^3$ are shown in bold. As with all other pollutants, predicted impacts drop off promptly and continuously away from the ambient air boundary.

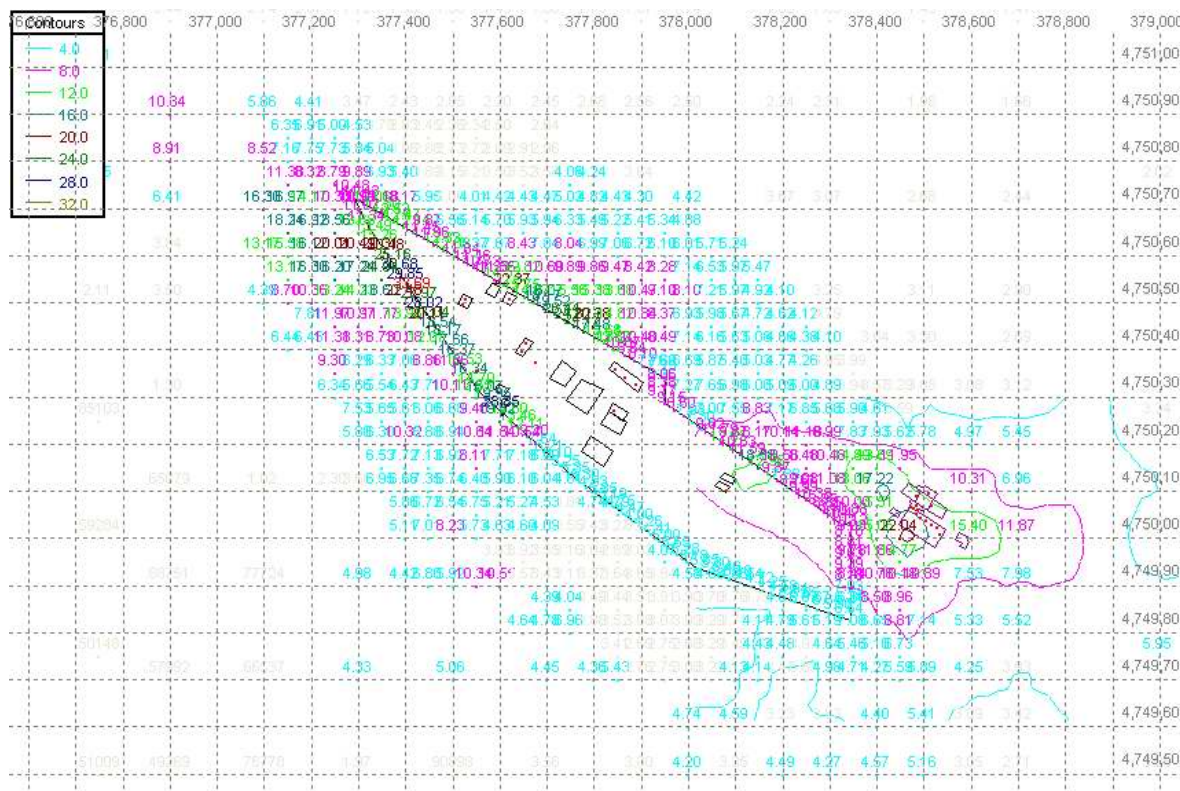


Figure 5 Model Predicted Maximum 24-hour Average Impacts

ELECTRONIC COPIES OF THE MODELING FILES

Electronic copies of all input, output, and support modeling files necessary to duplicate the model results are provided and accompany this submission. Those files include:

- HOKU 043007_97_pp.ext, where
pp = the pollutant ID, and
ext = .DAT for AERMOD input files, .LST for AERMOD model output files
- HOKU.MAP and HOKU.MOU AERMAP input and output files
- The IDEQ provided SITE1_97.PFL and SFC AERMET meteorological data files

APPENDIX E

PUBLIC MEETING NEWSPAPER ANNOUNCEMENT

Hoku Materials Public Announcement

Source: Idaho State Journal

Printed: Friday, April 27, 2007

Section: Legal Notices, page D12

the Clerk of the Court.

DATED this 5th day of April, 2007
/s/Dawn Holladay
Dawn Holladay, Personal Representative
April 13, 20, 27, 2007
LN13049

POLYSILICON MANUFACTURING PLAINT PLANS MEETING

Hoku Materials – will hold an informational meeting in accordance with Idaho regulations on May 9, at the Best Western Pocatello Inn off of Exit 71 on Interstate 15, in Pocatello, at 1 p.m.

The purpose of this meeting will be to discuss an air quality Permit to Construct application for building and operating a 2,000 metric-ton per year polysilicon manufacturing plant in Pocatello, Idaho.

April 27, 2007
LN14007

Notice of Re-Scheduled Trustee's Sale
Idaho Code 45-1506A Today's date:

necessary after we receive your check. For further information write or call the Successor Trustee at the address or telephone number provided above. Basis of default: failure to make payments when due. Please take notice that the Successor Trustee will sell at public auction to the highest bidder for certified funds or equivalent the property described above. The property address is identified to comply with IC 60-113 but is not warranted to be correct. The property's legal description is: The Northeast 70 feet of Lots 1 and 2, Block 125, Pocatello Townsite, Bannock County, Idaho, as the same appears on the official plat thereof. The sale is subject to conditions, rules and procedures as described at the sale and which can be reviewed at www.northwesttrustee.com or USA-Foreclosure.com. The sale is made without representation, warranty or covenant of any kind. (TS# 710425720)

ON THE OFFICIAL PLAT THEREOF, FILED IN THE OFFICE OF THE COUNTY RECORDER OF BANNOCK COUNTY, IDAHO.

The Successor Trustee has no knowledge of a more particular description of the above-referenced real property, but for purposes of compliance with Section 60-113, Idaho Code, the Successor Trustee has been informed that the street address of 29 Hillcrest Dr., Pocatello, Idaho, is sometimes associated with said real property.

Said sale will be made without covenant or warranty regarding title, possession or encumbrances to satisfy the obligation secured by and pursuant to the power of sale conferred in the Deed of Trust executed by MICHAEL R. MALMQUIST and RACHAEL E. MALMQUIST, Husband and Wife, Grantor, to Charles W. Fawcett, Successor Trustee, for the benefit and security of BANK OF

The default for which this sale is to be made is the failure to pay when due, monthly installment payments under the Deed of Trust Note dated May 6, 2005, in the amount of \$399.00 each, for the months of December, 2006 through March, 2007, inclusive; and for each and every month thereafter until date of sale or reimbursement. All delinquent payments are now due, plus accumulated late charges, plus any costs or expenses associated with this foreclosure. The accrued interest is at the rate of 4.99% per annum from November 1, 2006. The principal balance owing as of this date on the obligation secured by said Deed of Trust is \$40,317.84, plus accrued interest at the rate of 4.99% per annum from November 1, 2006.

DATED This 13 day of April, 2007.
/s/Charles W. Fawcett

E-Mail your